

**REMARKS/ARGUMENTS**

Prior to entry of this Amendment, claims 8-16 were pending in this application, claims 17-22 having been previously withdrawn and claim 23 having been previously canceled. Claims 8, 9, and 12-16 are amended by this paper. New claim 24 is added, and no claims are canceled. No new matter is added by these amendments. Therefore, claims 8-16 and 24 are now pending for examination in this application. No new matter is added by these amendments.

This amendment is being submitted in conjunction with a Request for Continued Examination under 37 C.F.R. § 1.114. Applicant respectfully requests reconsideration and further examination of the application as amended, in view of the following remarks.

**Interview Summary**

Applicant thanks the Examiner for the productive and cordial telephone interview conducted March 19, 2009 with Applicant's representative Mr. David W. Boyd. Claims 8-16 were discussed, in light of the rejections under 35 U.S.C. § 112 and in view of the Bass reference. During the interview, Applicant offered several portions of the specification as support for claim terms objected to by the Office Action. Possible claim amendments were discussed that would clarify support for the terms, and further distinguish the claims over the cited Bass reference. It was agreed that Bass does not disclose both a plurality of first thermal modules and a plurality of second thermal modules. The Examiner indicated that some of the claim amendments discussed would raise new issues and require additional searching.

**Rejections under 35 U.S.C. § 112**

The Final Office Action ("Office Action") has rejected claims 8-16 under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement.

**Claim 8 - "flexibly coupled"**

The Office Action first asserts that the specification does not provide support for flexibly coupling between the plurality of first thermal modules and between the plurality of

second thermal modules as recited in claim 8. Claim 8 has been amended avoid reciting flexible coupling between modules.

Claim 14 has been amended to recite that *at least one of the plurality of second thermal modules is compliantly coupled with at least one other of the plurality of second thermal modules*. As was discussed in the interview, as used in the art, compliance is the ability for the parts to move as necessary to accommodate such effects as thermal expansion and contraction. As is shown in revised Figure 2 and described in paragraph [0011], spring 15, connecting rod 17, and C-ring 18 couple cold blocks 1 and 3 in a way that “allows all axis expansion, contraction and natural mechanical variance...” The cold blocks, which are *second thermal modules*, are *compliantly coupled*. Applicants believe, and the Examiner agreed, that the term *compliantly coupled* is therefore supported in the specification.

Claim 8 – pluralities of first and second thermal modules

The Office Action also asserts that the specification does not provide support for both a plurality of first thermal modules and a plurality of second thermal modules as recited in claim 8. Claim 8 has been amended so as to recite that the claims assembly comprises *a first thermal module* rather than a plurality of first thermal modules. (Of course, this language does not preclude the existence of other first thermal modules.) The amended claim is fully supported in the specification, which shows in Figure 1 a first thermal module (“hot block” 7) and a plurality of second thermal modules (segments of “cold blocks” 1 and 3).

Claim 11 – “actively variable force”

The Office Action then objects to the term *actively variable force* as used in claim 11. As discussed in the interview, an *actively variable force* may be exerted by spring 15 shown in replacement Figure 2, and can change (is variable) to accommodate thermal expansion and contraction, as described in paragraph [0011]. Applicant believes this term to be supported.

Claims 14 and 15 – two and three degrees of freedom

The Office Action also objects to claims 14 and 15, which recite that the first thermal modules may be coupled such that the thermal modules have two or three degrees of freedom of movement relative to each other. This element of claim 14 has been moved into

claim 8. These claims have been amended to recite that it is the second thermal modules that are coupled in this way, in harmony with the language of claim 8.

As was discussed in the interview, Applicant believes these terms to be supported by the specification. However, claims 8 and 15 have been amended to replace the term “degrees of freedom” with “axes”, to more closely match the language of the specification. For example, paragraph [0004] notes that the embodiment “allows for mechanical thermal expansion and contraction in three axis while maintaining compression equally on all members of the parallel plane stack of thermoelectric modules.” Paragraph [0011] also notes that the “embodiment allows all axis expansion, contraction and natural mechanical variance in stack elements....” Thus several parts of the specification indicate that the assembly allows the thermal modules to conform to other parts of the system and to accommodate thermal expansion and contraction by being positionable in up to three axes.

Applicants believe all of the rejections under 35 U.S.C. § 112 to be traversed or overcome, and respectfully request that the rejections be withdrawn.

**Rejection under 35 U.S.C. § 102(b)**

The Office Action has rejected claims 8-15 under 35 U.S.C. §102(b) as being allegedly anticipated by the cited portions of U.S. Patent 5,625,245 to Bass (“Bass”).

Claim 8 has been amended, and recites in part

*a plurality of thermoelectric modules wherein: each of the thermoelectric modules comprises a first side and a second side ...  
a first thermal module ... configured to exchange heat with the first sides of at least two of the plurality of thermoelectric modules, and  
a plurality of second thermal modules, wherein ...  
a side of each of the second thermal modules is configured to exchange heat with exactly one of the thermoelectric modules through the second side of the respective thermoelectric module; and  
each of the second thermal modules is configurable in at least two axes with respect to the first thermal module such that each of the second thermal modules accommodates tolerance variation in its respective thermoelectric module.*

The sections of claim 8 highlighted above have been added by amendment. These amendments find support in the specification at least in Figures 1 and 2, and in paragraph [0011]. For example, Figure 1 shows *a first thermal module* (“hot block” 7) and *a plurality of second thermal modules* (segments of “cold blocks” 1 and 3). Each of a *plurality of thermoelectric modules* 10 and 11 contacts hot block 7 on one side, and one side of each *second thermal module* (cold block segment) contacts *exactly one of the thermoelectric modules* on the second side of the respective thermoelectric module. Each of the cold blocks is free to conform itself to the surfaces of the thermoelectric modules, by virtue of compression from spring 15 and rod 16, as well as O-ring connection 13 between the cold block segments. This conformance, or compliance, permits each of the *second thermal modules* to configure itself in *at least two axes*.

Bass does not describe either of the claim elements highlighted above. In Bass, multiple thermoelectric modules 4 are sandwiched between each “heat sink” 16 and “support structure” 2. (Bass Figure 2). As such, both of these elements are in contact with multiple thermoelectric modules. Also, neither Bass’s heat sink 16 nor its support structure 2 can configure itself in at least two axes to contact the thermoelectric modules 4. In Bass, very large forces exerted by screws around the outside of the assembly conform the heat sinks to the thermoelectric modules. (Bass column 3 lines 1-25).

Because Bass does not disclose each and every element of claim 8, claim 8 is not anticipated by Bass. Claims 9-15 depend from claim 8 and add further limitations, and are therefore also not anticipated by Bass.

**Rejection under 35 U.S.C. § 103(a)**

The Office Action has rejected claim 16 under 35 U.S.C. §103(a) as being allegedly unpatentable over the cited portions of Bass as applied to claim 8 above, and further in view of the cited portions of Sorber, U.S. Patent 4,564,504 (“Sorber”). Claim 16 depends indirectly from claim 8 and adds further limitations. The Office Action relies on Bass to teach or suggest all of the limitations of claims 8. As is explained above, Bass does not do so. Sorber does not cure this deficiency, and claim 16 is believed allowable for at least this reason.

New Claim


Claim 24 is newly added, and recites that *the first fluid is at a higher temperature than the second fluid*. This limitation finds support in the specification at least in paragraph [0010]. Claim 24 depends from claim 8 and adds further limitations. As is explained above, claim 8 is believed allowable, and claim 24 is therefore also believed allowable, at least by virtue of its dependence from an allowable base claim.

CONCLUSION

In view of the foregoing, Applicant believes all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 303-571-4000.

Respectfully submitted,



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